

I claim:

1. A system for retrieving information from one or more information sources, wherein the information includes a plurality of content types, comprising:
 - a host device coupled to the one or more information sources for retrieving the information; and
 - a translation component coupled to the host device, the translation component including a plurality of content translators, wherein each content translator is configured to translate one of the plurality of content types into common virtual machine language programs.
2. The system of claim 1, further comprising:
 - a plurality of client devices coupled to the translation component, each of the client devices including an interface for receiving common virtual machine language programs from the translation component and a virtual machine engine for executing the received common virtual machine language programs.
3. The system of claim 2, wherein the plurality of client devices further include a file explorer component for sending an information request to the host device, which then retrieves the requested information from the one or more information sources and passes the requested information to the translation component.

4. The system of claim 1, wherein at least one of the plurality of content translators is an HTML content translator for translating HTML type content into a virtual machine language program.

5. The system of claim 1, wherein at least one of the plurality of content translators is an HDML content translator for translating HDML type content into a virtual machine language program.

6. The system of claim 1, wherein at least one of the plurality of content translators is an XML content translator for translating XML type content into a virtual machine language program.

7. The system of claim 1, wherein at least one of the plurality of content translators is a WML content translator for translating WML type content into a virtual machine language program.

8. The system of claim 1, wherein the plurality of content translators include an HTML content translator and an XML content translator, wherein each of the HTML and XML content translators translates content information into a common virtual machine language program.

9. The system of claim 1, wherein the plurality of content translators include an HTML content translator, an XML content translator and an HDML content translator,

wherein each of the HTML, XML and HDML content translators translates content information into a common virtual machine language program.

10. The system of claim 1, wherein the information is retrieved from the one or more information sources through a TCP/IP network connection between the host system and the one or more information sources.

11. The system of claim 10, wherein at least one of the one or more information sources is a web site accessible via the Internet.

12. The system of claim 1, further comprising:
a byte code generator coupled to the translation component for compressing the common virtual machine language programs.

13. The system of claim 12, wherein the byte code generator includes a look-up table that converts source code of the virtual machine language programs into corresponding byte codes.

14. The system of claim 2, further comprising a network coupling the plurality of client devices to the translation component.

15. The system of claim 14, wherein the translation component further includes a network protocol interface for transmitting and receiving data via the network.
16. The system of claim 15, wherein the network protocol interface packetizes the virtual machine language programs for transmission to the plurality of client devices via the network.
17. The system of claim 14, wherein the network is a wireless digital data network.
18. The system of claim 17, wherein the wireless digital data network is a packet data network.
19. The system of claim 2, wherein the plurality of client devices are mobile computing apparatuses.
20. The system of claim 19, wherein the mobile computing apparatuses are PDAs, cellular telephones, Internet appliances, or two-way pagers.
21. The system of claim 2, wherein the content translator further includes a virtual machine pass through component for receiving a virtual machine language program from the host system and for directly transmitting the virtual machine language program to one of the client devices.

22. The system of claim 1, wherein the content translator is located at the host system.
23. The system of claim 1, wherein the content translator is coupled to the host system via an HTTP interface.
24. The system of claim 2, wherein the plurality of client devices further include a program store for storing a plurality of virtual machine language programs received from the translation component.
25. The system of claim 24, wherein the plurality of client devices further include a file explorer and storage interface for generating an information request, determining whether the requested information is associated with a corresponding virtual machine language program stored in the program store, and if so, then retrieving the virtual machine language program from the program store, and if not, then sending the information request to the host system.
26. The system of claim 2, wherein the plurality of client devices further include a program verification component for verifying the integrity of the virtual machine language programs received from the translation component.
27. A system for accessing information, comprising:
a plurality of information sources for storing information including a plurality of content types;

a host device coupled to the plurality of information sources for retrieving the stored information, wherein the host device includes a plurality of content translators for translating the plurality of content types into virtual machine language programs; and

a plurality of client devices for transmitting information requests to access the stored information to the host device and for receiving the virtual machine language programs in response to the information requests, wherein each of the client devices includes a virtual machine engine for executing the virtual machine language programs.

28. A system for browsing documents from a wireless data communication device, comprising:

a wireless data network for communicating with the wireless data communication device;

a gateway system coupled between the wireless data network and a plurality of information sources that store documents, the gateway system including:

an interface for sending information requests to the plurality of information sources and for receiving corresponding documents in return, wherein the documents include a plurality of content types; and

a plurality of content translators for translating the documents into a plurality of virtual machine language programs;

wherein the wireless data communication device includes:

a file explorer for browsing the documents by generating an information request to the gateway system and for receiving a corresponding virtual machine

language program; and a virtual machine engine for executing the received virtual machine language program.

29. The system of claim 28, wherein the wireless data communication device further includes a memory for cacheing a plurality of previously requested virtual machine language programs, wherein the file explorer determines if an information request is associated with a virtual machine language program stored in the memory, and if so, the virtual machine engine retrieves the virtual machine language program from the memory.

30. The system of claim 29, wherein the wireless data communication device further includes a program verification component for verifying the integrity of the virtual machine language programs received from the gateway system.

31. The system of claim 28, wherein the plurality of content translators include an HTML content translator and a WML content translator.

32. A method of transmitting information from an information source to a client device, comprising the steps of:

retrieving the information from the information source;

translating the information from at least one content type into a virtual machine language program; and

transmitting the virtual machine language program to the client device via a network.

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The method of claim 32, further comprising the step of executing the virtual machine language program at the client device using a virtual machine engine.

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The method of claim 32, further comprising the step of storing a plurality of virtual machine language programs at the client device.

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The method of claim 33, further comprising the steps of:
generating an information request at the client device;
determining whether a virtual machine language program associated with the information request is stored at the client device; and
if the associated virtual machine language program is not stored at the client device, then sending the information request to the information source.

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The method of claim 32, further comprising the step of compressing the virtual machine language program using a byte code generator prior to transmitting the virtual machine language program to the client device.

37. A method of retrieving information from one or more information sources, wherein the information includes a plurality of content types, the method comprising the steps of:
sending an information request from a host system to the one or more information sources to retrieve the information;

translating the information into one or more virtual machine language programs;
and

transmitting the one or more virtual machine language programs to a client device
that generated the information request.

38. The method of claim 37, further comprising the steps of:

providing a plurality of content translators, wherein each content translator is
configured to translate one of the plurality of content types; and

operating the content translators in order to translate the plurality of content types
into the one or more virtual machine language programs.

39. The method of claim 37, further comprising the step of executing the virtual
machine language programs at the client device.

40. The method of claim 39, further comprising the step of storing the virtual machine
language programs at the client device.

41. The method of claim 40, further comprising the steps of:

sending an information request from the client device to the one or more
information sources if a virtual machine language program associated with the
information request is not stored at the client device.

42. The method of claim 37, further comprising the step of compressing the virtual machine language programs prior to transmitting them to the client device.

43. A method of browsing documents stored at a plurality of information sources, wherein the documents include a plurality of content types, the method comprising the steps of:

retrieving a requested document from one of the plurality of information sources;
translating the requested document into a virtual machine language program;
transmitting the virtual machine language program over a wireless network to a wireless data communication device; and
executing the virtual machine language program at the wireless data communication device.